

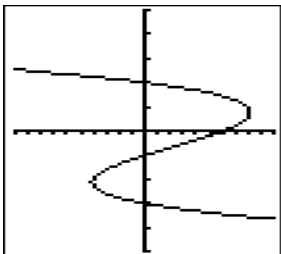
4.10

Inverses & One-to-one Functions

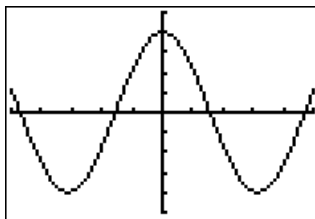
Name _____ Date _____ Period _____

In each exercise determine a) whether the relation is a function and b) whether the relations inverse is a function.

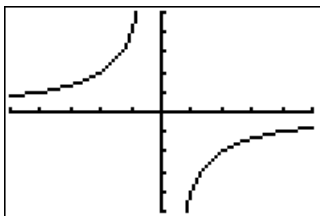
1.



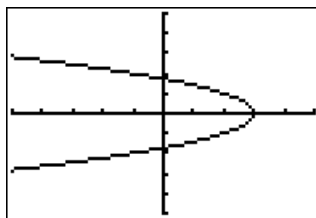
2.



3.



4.



Find a formula for $f^{-1}(x)$. Give the domain of f^{-1} , and any restrictions "inherited" from f .

5. $f(x) = 3x - 6$

6. $f(x) = 2x + 5$

7. $f(x) = \frac{2x-3}{x+1}$

8. $f(x) = \frac{x+3}{x-2}$

9. $f(x) = \sqrt{x-2}$

10. $f(x) = \sqrt{x+5}$

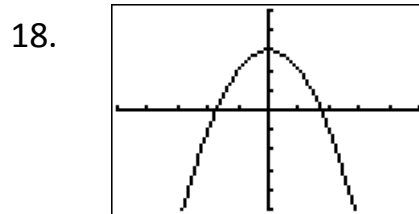
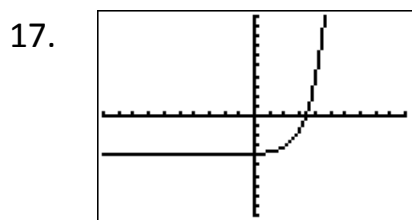
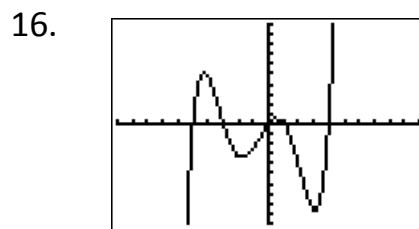
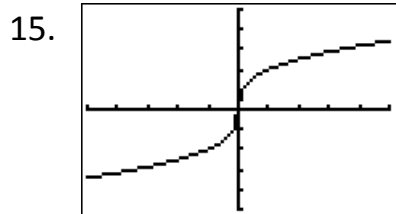
11. $f(x) = x^3 + 4$

12. $f(x) = \sqrt[3]{x+3} - 2$

13. $f(x) = (x-1)^3 + 6$

14. $f(x) = \frac{1}{2}\sqrt{x-1} - 3$

Determine whether the function is one-to-one. If it is one-to-one, sketch the graph of its inverse.



Confirm that f and g are inverses by showing that $f(g(x)) = x$ and $g(f(x)) = x$. Show work!

19. $f(x) = 3x - 2$ and $g(x) = \frac{x+2}{3}$

20. $f(x) = \frac{x+3}{4}$ and $g(x) = 4x - 3$

21. $f(x) = x^3 + 1$ and $g(x) = \sqrt[3]{x-1}$

22. $f(x) = \frac{x+1}{x}$ and $g(x) = \frac{1}{x-1}$

23. $f(x) = \frac{1}{2}x^2 - 5, x \geq 0$ and $g(x) = \sqrt{2x+10}$

Use the table to write the table for the inverse function.

24.

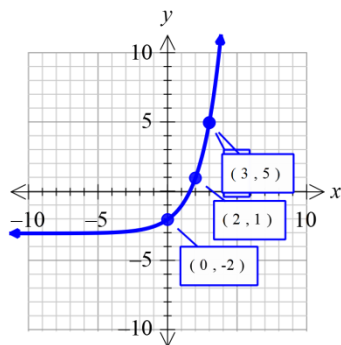
x	$f(x)$
0	4
2	2
4	-4
6	-14
8	-28

25.

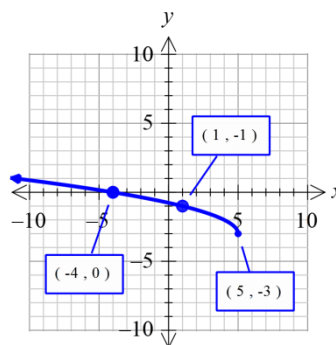
x	$f(x)$
-17	1.7
-12	1.6
-9	1.5
-7	1.4
-3	1

Use the graph to draw the graph to the inverse function.

26.



27.



For each function, find a suitable domain to make the function an invertible function. Show work!

28. $f(x) = 2x^2 - 3$

29. $f(x) = -(x+2)^2$

30. $f(x) = -2|x| + 6$

31. $f(x) = (x+5)^4 - 3$

Review Exercises

Multiply the polynomials. Show work!

32. $(x-7)(x+7)$

33. $(x-7)^2$

34. $(x+7)^2$

Solve the quadratic equation by using the quadratic formula. Show work!

35. $2x^2 - 5x + 7 = 0$

36. If $f(x) = 2x - 1$ and $g(x) = \frac{1}{x}$ find $(f \circ g)(x)$ and state the domain of the new function.